

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference FA1116PCT		FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/US2004/028920		International filing date (day/month/year) 03.09.2004	Priority date (day/month/year) 03.09.2003	
International Patent Classification (IPC) or national classification and IPC B05D3/02, B05D7/00				
Applicant E.I. DUPONT DE NEMOURS AND COMPANY et al.				
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input type="checkbox"/> sent to the applicant and to the International Bureau a total of sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>				
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>				
Date of submission of the demand 30.03.2005		Date of completion of this report 12.08.2005		
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Polesak, H Telephone No. +49 89 2399- 		

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/US2004/028920

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-17 as originally filed

Claims, Numbers

1-12 as originally filed

Drawings, Sheets

1/4-4/4 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing *(specify)*:
 - ☐ any table(s) related to sequence listing *(specify)*:
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing *(specify)*:
 - ☐ any table(s) related to sequence listing *(specify)*:

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-12
	No: Claims	
Inventive step (IS)	Yes: Claims	1-12
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-12
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

(1) US-B1-6 291 027

(2) US-A-4 943 447

1. The subject matter of independent claim 1 is neither disclosed nor suggested by the prior art. To avoid defects such as pops, bubbles, blisters or pinholes on the coating of a substrate, the applicant has found that the process parameters such as convection or infrared heating, air velocity, air temperature, process time, must follow very specific conditions. These conditions which are required for the performance of the drying process are not disclosed by the prior art. According to present claim 1 in a first drying step, cold air having a temperature ranging from about 20° C to about 40° C for a period of about 30 seconds is used to volatilize at least a portion of volatile material from the liquid basecoating composition, the velocity of the air at a surface of the basecoating composition being about 0.3 to about 1 meter per second; in a subsequent drying step heated air is applied to the basecoating composition for a period of about 30 seconds to 2 minutes, the velocity of the air at the surface of the basecoating composition being about 1.5 to about 15 meters per second, the air having a temperature ranging from about 30° C to about 90° C; and in a final step infrared radiation and heated air simultaneously applied to the basecoating composition for a period from about 30 seconds to 2 minutes, the velocity of the air at the surface of the basecoating composition being about 1.5 to 5 meters per second, the air having temperature of from about 30° C to about 60° C, such that a sufficiently dried basecoat is formed.
2. Document (1) discloses a much more elaborate process that includes four steps: (a) exposing the basecoating composition to air having a temperature ranging from about 10° C. to about 30°C for a period of at least about 30 seconds to volatilize at least a portion of volatile material from the liquid basecoating composition; (b) applying infrared radiation and warm air simultaneously to the basecoating composition for a period of at least about 30 seconds to achieve a peak temperature of the substrate ranging from about 20°C to about 60° C; (c) applying infrared radiation and hot air simultaneously to the basecoating composition for a period of at least about 30 seconds such that a dried basecoat is formed upon the surface of the substrate.

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(SEPARATE SHEET)**

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3. Document (2) discloses a conventional prior art processes for coating a metal substrate, comprising the steps of: (a) applying a liquid basecoating composition to the surface of the substrate; (b) exposing the basecoating composition to heated air; (c) applying a infrared radiation an warm air to said composition; and (d) applying a liquid top coating composition over the dried base coat. Document (2) is silent about the specific temperature ranges, air velocity and the heating rates disclosed in claim 1. Furthermore, a person skilled in the art does not get any hint to modify the process known from document (1) in the way mentioned above.
4. Consequently, the subject matter of claim 1 is novel, involves an inventive step and is industrially applicable (Article 33(2)-(3) and (4) PCT).
5. The features of dependent claims 2 to 12 represent further embodiments of the drying process according to claim 1. These claims meet therefore the requirements of the PCT regulation.